SECTION 33 44 13.13

CATCH BASINS

## PART 1 – GENERAL

### 1.01 DESCRIPTION

A. Scope:
   1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install precast concrete catch basins.
   2. Catch basins shall conform in shape, size, dimensions, material, and other respects to the details shown or indicated on the Drawings, or as directed by Engineer.

B. Coordination:
   1. Review installation procedures under this and other Sections and coordinate the installation of items that must be installed with or before catch basins.

C. Related Sections:
   1. Section 31 23 00, Excavation and Fill.

### 1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:
   1. ASTM A48/A48M, Standard Specification for Gray Iron Castings.
   2. ASTM C144, Standard Specification for Aggregate for Masonry Mortar.
   3. ASTM C150/C150M, Standard Specification for Portland Cement.
   4. ASTM C207, Standard Specification for Hydrated Lime for Masonry Purposes.
   5. ASTM C890, Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures.
   6. ASTM C990, Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
   7. ASTM C913, Standard Specification for Precast Concrete Water and Wastewater Structures.
   8. ASTM C923, Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
   9. ASTM C1107/C1107M, Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

### 1.03 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
      a. 29 CFR 1910, Occupational Safety and Health Standards.
   2. Obtain required permits for Work in roads, rights-of-way, and other areas of the Work.

1.04 SUBMITTALS

A. Action Submittals:
   1. Shop Drawings: Submit drawings showing design and construction details for the following:
      a. Precast concrete catch basins, including details of joints between base and riser sections and openings for connections.
      b. Cast iron frames and grates.
   2. Product Data: Submit manufacturer's data and specifications for the following:
      a. Cast iron frames and grates.
      b. Resilient pipe connectors and corrugated pipe adapters.

B. Closeout Submittals:
   1. Record Documentation:
      a. Maintain accurate and up-to-date record documents showing modifications made in the field, in accordance with approved submittals, and other Contract modifications relative to catch basin Work. Submittal shall show actual location of all catch basin Work and appurtenances at same scale as the Drawings.
      b. Show catch basins with rim, invert, and sump elevations referenced to Project datum.
      c. Comply with Section 01 78 39 (Project Record Documents).

PART 2 – PRODUCTS

2.01 PRECAST CONCRETE CATCH BASINS

A. Except where otherwise specified, precast catch basins shall consist of monolithic or sectional reinforced concrete structures designed and manufactured in accordance with ASTM C890 and ASTM C913.

B. Precast, reinforced concrete components shall be manufactured by wet cast methods only, using forms that will provide smooth surfaces free from irregularities, honeycombing, or other imperfections.

C. Joints between catch basin components shall conform to ASTM C990.

D. All precast catch basin components shall be of approved design and of sufficient strength to withstand the loads imposed upon them. They shall be designed for a minimum earth cover loading of 130 pounds per cubic foot, AASHTO H20 wheel loadings, and an allowance of 30 percent in roadways and 15 percent in rights-of-way for impact. Wall thickness shall be not less than six inches.

E. Lifting holes, if used in structure components, shall be tapered, and no more than two holes shall be cast in each section. Tapered, solid rubber plugs shall be furnished to seal the lifting holes. Lifting holes shall be made to be sealed by plugs driven from the outside face of the structure only.

F. Mark date of manufacture and name or trademark of manufacturer on inside of structure.

G. Pipe openings shall be precast or machine cored.

## 2.02 FRAMES AND GRATES

A. Standard Frames and Grates:
   1. Provide cast iron frames and covers of the shape, size, and dimensions shown or indicated on the Drawings. Frames and covers shall be designed for AASHTO H20 wheel loadings.
   2. Manufacturer: Provide products of one of the following:
      a. East Jordan Iron Works, Inc.
      b. Neenah Foundry Company.
      c. Or equal.
   3. Castings: ASTM A48/A48M, Class No. 30B. Provide castings of uniform quality, free from pouring faults, sponginess, cracks, blowholes, and other defects in positions affecting their strength. Bearing surfaces shall be machined to ensure that grates seat firmly in frames without rocking or rattling under traffic.
   4. Anchor Bolts and Washers: Type 316 stainless steel.
   5. The words “DUMP NO WASTE! DRAINS TO WATERWAYS” shall be cast integrally into the grate.

## 2.03 RELATED MATERIALS

A. Aggregate Bedding Material for Catch Basins: Pipe bedding material in accordance with Section 31 23 00, unless otherwise shown or indicated.

B. Non-Shrink Grout: ASTM C1107/C1107M.
   1. Pre-packaged, non-metallic, cementitious grout requiring only the addition of water at the Site.
   2. Minimum Compressive Strength at 28 Days: 7,000 psi.
   3. Product and Manufacturer: Provide one of the following:
      a. NS Grout by Euclid Chemical Company.
      b. Set Grout by Master Builders, Inc.
      c. NBEC Grout by Five Star Products, Inc.
      d. Or equal.

C. Mortar: Mortar shall be composed of Portland cement, hydrated lime, and sand, in which the volume of sand shall not exceed three times the sum of the volumes of cement and lime.
   1. Portland Cement: ASTM C150/C150M, Type II.
   2. Hydrated Lime: ASTM C207, Type S.
   3. Sand: ASTM C144, except that 100 percent of the sand shall pass the No. 8 sieve.

D. Resilient Pipe Connectors: ASTM C923.
   1. Manufacturer: Provide products of one of the following:
      a. Trelleborg Pipe Seals.
      b. A-LOK Products, Inc.
      c. Or equal.
   2. Materials:
      a. Resilient materials for connectors and filler rings shall be manufactured from natural or synthetic rubber conforming to ASTM C923.
      b. Expansion rings, tension bands, and take-up devices used for mechanically compressing resilient portion of connector against pipe or catch basin shall be manufactured from Type 316 stainless steel.
   3. Joints: Joint created by connector shall be flexible and water-tight.
   4. Provide necessary adapters for making connections to corrugated pipe.

PART 3 – EXECUTION

3.01 INSPECTION

A. Examine the areas and conditions under which the Work will be performed and notify Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected in a manner acceptable to Engineer.

3.02 INSTALLATION

A. Precast Bases:
   1. Install precast bases on not less than 12-inch layer of aggregate bedding material placed and compacted in accordance with Section 31 23 00. Precast bases shall be set at the proper grade and carefully leveled and aligned.
   2. Lifting holes shall be sealed tight with a solid rubber plug driven into the hole from the outside of the structure and the remaining void filled with 1:2 cement-sand mortar.

B. Precast Riser Sections:
   1. Install riser sections, where shown, indicated, or required, in accordance with manufacturer's recommendations.
   2. Seal all joints inside and out with non-shrink grout and trowel smooth to the wall surface. Raised or rough joint finishes will not be accepted.

C. Frames and Grates:
   1. Set frame and grate at proper elevation on top of precast base or riser section in full bed of mortar, not greater than 0.5 inch thick.

3.03 GRADING AT CATCH BASINS

A. Catch basins in paved areas shall be constructed to meet final surface grade. Catch basins shall not project above finished roadway pavements.

END OF SECTION